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Vol. 40 No. 9

BULLETIN

OF THE

TORREY BOTANICAL CLUB

SEPTEMBER, 1913

# Studies on the Rocky Mountain flora — XXIX

Per Axel Rydberg

## MONOTROPACEAE

### **Hypopitys latisquama** Rydb. sp. nov.

Plant pink, 1–3 dm. high, more or less short-pubescent above; scales of the stem broadly ovate, obtuse, 1–1.5 cm. long; flowers usually 10–15; sepals spatulate or cuneate, 8–10 mm. long, abruptly acuminate, ciliate; petals cunate or obovate, 11–12 mm. long, rounded and sinuate at the apex, pubescent and ciliate, filaments and style copiously hairy; stigma retrorsely bearded.

This is closely related to *H. lanulosa* (Michx.) Nutt., but differs in the large and broad scales on the stem and the larger flowers.

MONTANA: Bridger Mountains, July 28, 1896. *Flodman 708* (type, in herb. N. Y. Bot. Gard.).

WYOMING: 1873, *Parry 196*.

WASHINGTON: Olympic Mountains, *Elmer 2464*.

## PRIMULACEAE

### **Primula specuicola** Rydb. sp. nov.

Perennial with a short rootstock; leaves 5–13 cm. long, thin, slightly farinose when young, in age glabrate, with winged petioles; blades spatulate or elliptic, obtuse at the apex, sinuate-dentate; scape 1–1.5 cm. long; umbels 10–20-flowered; bracts linear-subulate, thin, 5–10 mm. long, slightly gibbous at the base; pedicels 5–10 mm. long in flower or 1–4 cm. long in fruit; calyx densely farinose; tube deeply campanulate, 3–5 mm. long; lobes linear-oblong, 2.5–3.5 mm. long, obtusish; corolla-tube yellowish, 8–10

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[The BULLETIN for August (**40**: 377–460. *pl. 21, 22*) was issued 13 Au 1913.]

mm. long, 1.5 mm. in diameter; lobes cuneate, merely emarginate with a broad sinus, dark violet, about 3 mm. long; stamens inserted in the middle of the corolla-tube; capsule about 6 mm. long.

This species is related to *P. farinosa* L. and *P. incana* M. E. Jones, but differs from both in its very thin leaves, more exserted corolla-tube and slender bracts. In *P. incana* M. E. Jones (*P. americana* Rydb.), the only other species of the group in the Rocky Mountains, the bracts are thick, almost fleshy, obtusish, lanceolate, and often nearly equaling the pedicels. In the bracts and inflorescence, it resembles more *P. farinosa* L. of Europe and northeastern America. *P. Ellisiae* of the Sandea Mountains of New Mexico, though belonging to this group and of the same habit, has much larger flowers, the lobes of the corolla being 8–10 mm. long. *P. specuicola* grows only in loose soil, under overhanging cliffs in the alcove-like heads of the canyons, characteristic of the limestone bluffs of San Juan River.

UTAH: Along San Juan River, near Bluffs, Aug. 25–29, 1911, *Rydberg 9882* (type, in herb. N. Y. Bot. Gard.); same locality, Feb., 1912, *Edna Scorup*, and in 1895, *Alice Eastwood.*

### **Androsace albertina** Rydb. sp. nov.

Cespitose perennial, but scarcely pulvinate; leaves narrowly oblanceolate, about 1 cm. long, sparingly ciliate, not carinate; scape 5–10 cm. long, slender, sparingly hairy; bracts linear-lanceolate, 3–4 mm. long; pedicels 3–5 mm.; calyx-lobes elliptic, obtuse; corolla-lobes 2–3 mm. long.

This is most like the European *A. Chamaejasme* Host, but the leaves and bracts are narrower. It differs from *A. carinata* Torr. in the narrower leaves, not carinate beneath, less pulvinate habit, longer peduncles, longer pedicels, and smaller flowers.

ALBERTA: Lake Agnes, National Park, Banff, Aug. 1897, *Mr. and Mrs. C. Van Brunt 77* (type, in herb. N. Y. Bot. Gard.); Jumping Pound Creek, June 14, 1897, *Macoun 23478;* Rocky Mountains 1858, *Bourgeau.*

MONTANA: Yellow Mountain, June 24, 1897, *R. S. Williams.*

### **Androsace simplex** Rydb. sp. nov.

Annual; leaves oblanceolate, 3–6 mm. long, acute, entire, minutely puberulent; scape usually solitary, erect, very slender, 2–7 cm. high; bracts oval or lance-oval, 2–4 mm. long; pedicels

5–15 mm. long, suberect or strongly ascending; calyx-tube obpyramidal, about 2 mm. long; lobes lanceolate, about 1.5 mm. long, acute; corolla small, shorter than the calyx.

This is related to *A. occidentalis*, but the plant is more delicate, the scapes solitary, bearing a 1–4-flowered umbel with strongly ascending or nearly erect pedicels, the bracts smaller and distinctly acute.

MONTANA: Missoula, May, 1897, *Elrod & assistants 33* (type, in herb. N. Y. Bot. Gard.).

UTAH: Near Salt Lake City, May 1882, *M. E. Jones*.

BRITISH COLUMBIA: Lytton, April 17, 1889, *Macoun*.

Dr. Greene separates an American species *Androsace capillaris* Greene from the Asiatic *A. filiformis* Retz, and claims that the former is a perennial. All American specimens that I have seen are, however, annuals, and I can see no reason for such a separation.

*Dodecatheon Jaffreyi* Moore has been collected near Sawtooth, Idaho, by Evermann.

## GENTIANACEAE

### **Anthopogon ventricosum** (Griseb.) Rydb.

*Gentiana ventricosa* Griseb. in Hook. Fl. Bor.-Am. 2: 65. 1838.

### **Anthopogon Macounii** (Holm) Rydb.

*Gentiana Macounii* Holm, Ottawa Nat. 15: 110, 179. 1901.

### **Anthopogon tonsum** (Lunell) Rydb. sp. nov.

*Gentiana detonsa tonsa* Lunell, Bull. Leeds Herb. 2: 7. 1908.

This is closely related to *A. Macounii* (Holm) Rydb., but differs in the glabrous filaments, a character not pointed out by Dr. Lunell.

### **Amarella tortuosa** (M. E. Jones) Rydb.

*Gentiana tortuosa* M. E. Jones, Proc. Calif. Acad. II. 5: 707. 1895.

### **Amarella ventorum** Rydb. sp. nov.

*Gentiana arctophila densiflora* Torr. Fremont's Rep. 94. 1845.
Not *G. arctophila densiflora* Griseb.

Low annual or biennial, branched near the base; stems 5–10 cm. long, branched, internodes shorter than the leaves; basal leaves oblanceolate; stem-leaves linear or linear-lanceolate, about 2 cm., acute; flowers 1–3 in the axils; pedicels 2–8 mm. long; calyx-tube about 2 mm. long; lobes linear-lanceolate, 3–5 mm. long, acute, scabrous on the margins; corolla about 5 mm. long; lobes ovate, obtuse or acute; crown none.

This little *Amarella* lacks the setaceous fimbriate crown at the base of the corolla-lobes and therefore should be classified with the arctic or subarctic *A. propinqua* (Richards.) Greene, and *A. arctophila* (Griseb.) Greene, but the corolla-lobes are acute or obtuse, instead of cuspidate.

WYOMING: Wind River Moutainns, Aug. 4, 1843, *Fremont.*

**Dasystephana oregana** (Engelm.) Rydb.

*Gentiana oregana* Engelm.; A. Gray, Syn. Fl. 2$^1$: 122. 1878.

**Dasystephana glauca** (Pall.) Rydb.

*Gentiana glauca* Pall. Fl. Ross. **2**: 104. 1784.

**Dasystephana calycosa** (Griseb.) Rydb.

*Gentiana calycosa* Griseb. Gen. et Sp. Gent. 292. 1839.

**Dasystephana monticola** Rydb. sp. nov.

*Gentiana calycosa stricta* Griseb. Gen. et Sp. Gent. 292. 1839.

*Gentiana calycosa monticola* Rydb. Bull. Torrey Club **24**: 252. 1897.

**Dasystephana obtusiloba** Rydb. sp. nov.

Cespitose perennial; stems erect or ascending, about 1 dm. high; internodes short, equaling or a little longer than the leaves; leaves very broadly ovate, 3–5-ribbed, usually acute at the apex and subcordate at the base; calyx-tube broadly turbinate, 5–6 mm. long; lobes broadly oval, rounded at the apex, often overlapping, about 8 mm. long; corolla dark blue, about 3.5 cm. long; lobes rounded at the apex; lobes of the plaits about half as long as the corolla lobes.

This is related to *D. calycosa*, but differs in the lower habit and rounded corolla-lobes.

MONTANA: Mary Baker Lake and Sperry Glacier, Aug. 21, 1901, *Vreeland 1162* (type, in herb. N. Y. Bot. Gard.); Lake MacDonald, Aug. 22, 1901, *Umbach 371;* Mount MacDonald, July 25, 1900, *Elrod & assistants;* Silloway Peak, July 17–19, 1901, *MacDougal 692;* Blackfoot Indian Reservation, Aug. and Sept. 1909, *Gilman Thompson.*

### **Swertia Fritillaria** Rydb.

Glabrous, light green, perennial; stem 1.5–3 dm. high; basal leaves and lower stem-leaves alternate, 6–10 cm. long, thin, long-petioled; blades obovate, spatulate, rounded at the apex, abruptly contracted into winged petioles of about the same length; middle and upper stem-leaves all alternate or a single pair of opposite ones, oblanceolate or oblong; inflorescence rather lax, elongate; pedicels 1–2 cm. long; sepals lanceolate, about 6 mm. long; corolla-lobes lanceolate, mostly acute, greenish white along the midrib and azure along the margins, dotted all over with dark blue spots in the manner of many species of *Fritillaria;* filaments more or less dilated, some of them very broad; glands inconspicuous with rather long blue fringes.

UTAH: Wet places in caynons: Big Cottonwood Canyon, August 4, 1905, *Garrett 1566* (type, in herb. N. Y. Bot. Gard.).

## APOCYNACEAE

### **Amsonia Eastwoodiana** Rydb. sp. nov.

Perennial, with a short woody base; stem 3–5 dm. high, glabrous; stem-leaves lanceolate, usually narrowly so, 3–5 cm. long, glabrous, acute at each end; leaves of the numerous strongly ascending branches linear; calyx-lobes subulate, 2 mm. long or longer; corolla 16–20 mm. long; tube narrowly trumpet-shaped; lobes nearly 4 mm. long; pod 5–8 cm. long, about 8 mm. thick, constricted and often breaking off between the seeds, 3–5-seeded; seeds oblong, about 1 cm. long and 6 mm. thick.

This is most closely related to *A. brevifolia*, having the same flower and fruit, but the plant is in habit more like *A. Fremontii*, for which it has been mistaken. The latter has still longer calyx-lobes which are narrower, and its pod is not restricted between the seeds. In canyons of desert regions.

UTAH: Moab, July, 1911, *Rydberg & Garrett 8468* (fruit, type, in herb. N. Y. Bot. Gard.); Willow Creek Canyon, August, 1895, *Alice Eastwood 73* (fruit).

ARIZONA: Ten miles east of Holbrook, June 22, 1901, *L. F. Ward* (flowers); Lee's Ferry, 1890, *M. E. Jones.*

*Amsonia texana* (A. Gray) Heller of the Flora of Colorado and Coulter & Nelson's Manual is *A. latifolia* Jones. *A. brevifolia* A. Gray, and *A. tomentosa* Torr. have been collected in southern Utah.

## ASCLEPIADACEAE

*Astephanus utahensis* Engelm., *Philibertella cynanchoides* (Dec.) Vail and *P. heterophylla* (Engelm.) Vail, *Asclepias erosa* Torr., *A. macrosperma* Eastw. and *A. labriformis* Jones have been collected in Utah; *Acerates lanuginosa* (Nutt.) DC., in the Yellowstone Park; *Asclepias ovatifolia*, in Saskatchewan; and *Asclepias mexicana* Cav., in Idaho.

## CONVOLVULACEAE

### **Cressa erecta** Rydb. sp. nov.

Stem branched, with a woody base, erect, 2–3 dm. high with erect branches, silvery canescent; leaves elliptic, 5–7 mm. long, acute at both ends, sessile, silvery canescent; pedicels in fruit 6–10 mm. long, usually exceeding the leaves; bracts elliptic, 3 mm. long; sepals 4–5 mm. long, oval, equaling the corolla-tube; corolla white; lobes elliptic, acutish, rarely spreading; filaments filiform, slightly pubescent; ovary densely pubescent; styles filiform.

This differs from *C. depressa* Goodding in the erect stem and branches, the more silvery pubescence, the longer pedicels (in *C. depressa* shorter than the leaves) and the comparatively narrower corolla-lobes.

UTAH: Near Beck's Hot Springs, Salt Lake County, July, 1905, *Garrett 870f* (type, in herb. N. Y. Bot. Gard.).

## CUSCUTACEAE

### **Cuscuta curta** (Engelm.) Rydb. sp. nov.

*Cuscuta Gronovii curta* Engelm. Trans. St. Louis Acad. **1**: 507. 1859.

In saline districts of Utah and Colorado.

## POLEMONIACEAE

Dr. Brand* reduces the amply distinct *Phlox muscoides* Nutt. to a subspecies of *P. caespitosa* and makes *P. Covillei* E. Nels. and *P. condensata* (Gray) E. Nels. varieties of this subspecies. It is evident that Dr. Brand does not know what *P. muscoides* is; for the only Montana specimen he cites is *Rydberg & Bessey 4815*, which belongs to *Phlox caespitosa* and is so referred in my Flora of Montana. He also cites two specimens from California, *Coville 2072* from Mount Whitney and *Hildebrand* from Silver Mountains and also one from Charleston Mountains, Nevada, *Purpus 6111*. *Phlox muscoides* Nutt. is unknown to both California and Nevada. Neither *P. Covillei* nor *P. condensata* is closely related to *P. muscoides*. The relationship of *P. muscoides* is with *P. bryoides* on one hand, and *P. Hoodii* on the other; and the calyx is arachnoid-villous, not glandular as in *P. caespitosa*.

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* Pflanzenreich, Vol. 4, Fam. 250. The following pages contain a good deal of criticism of Dr. Brand's monograph of this family. The monograph is one of the best, differing in that respect from most works done by Europeans on American plants. The citation of publication is very carefully prepared, correct, and complete; but Dr. Brand has fallen into the same errors as most foreigners do, in not trying to find out exactly what the types are or what plants the descriptions really represent. He made definite pronunciations as to species he had never seen, and made synonyms from mere guesses. My criticisms are limited to the Rocky Mountain species. If the Pacific Slope species are considered, probably as many more incongruities could be pointed out.

Dr. Brand made *Phlox albomarginata* M. E. Jones, *P. costata* Rydb., *P. collina* Rydb. and *P. diapensioides* Rydb. varieties of *P. Kelseyi*, while he kept *P. alyssifolia* Greene as distinct and described a new species, *P. variabilis*, from material which I had included in *P. collina*. It is evident that Dr. Brand did not know the plants he was so treating. Under his var. *albomarginata* he gives the following distribution:

"Montana (nach Jones)—Wyoming: Cooper Creek (Nelson n. 4336)."

Evidently he had not seen Jones's specimens and *Nelson 4336* is typical *P. Kelseyi*, and has nothing of the habit of *P. albomarginata*.

Under each of his var. *collina* and var. *diapensioides* he gives the following: "Montana (nach Rydberg)." In other words, he had seen no specimens. Under his var. *costata* he gives: "Montana: Madison Co. (Nelson 5148)." This number is not found in the herbarium of the New York Botanical Garden, but judging from the rest I am inclined to think that this determination is just as unreliable. It may be that *5148* is a misprint for *5418*, which is labeled *Phlox Kelseyi*, and should be referred to it, but is not typical. It has nothing to do with *P. costata*. Furthermore, *P. costata* is not closely related to *P. Kelseyi*, but intermediate between *P. multiflora* A. Nels. and *P. glabrata* (A. Nels.) Brand, but with a densely pubescent calyx.

In my opinion, *P. alyssoides* Greene, *P. collina* Rydb., and *P.*

*variabilis* Brand are one and the same species. I included *Hall & Harbour 454* in the original description of *P. collina*, and I have no reason for changing my opinion. There is no essential difference between my diagnosis of *P. collina* and Brand's characterization of *P. variabilis*, except that I described the leaves as "oblong or ovate" and Brand gives them as "linear." The specimens in the Columbia University herbarium of *Hall & Harbour 454* have oblong leaves, hence agreeing better with my description. Furthermore, *P. alyssoides* (= *P. collina*), as I understand it, has been collected at several places in both Utah and Wyoming, and why not also in Colorado? Professor A. Nelson in Coulter & Nelson's New Manual has followed Dr. Brand's treatment of this group very closely. It would have been much better for him to find out the real facts.

Brand's description of *P. Douglasii* is not correct; he describes the calyx as eglandulose-pilose, while the duplicate of the type in the Columbia University herbarium is densely glandular.

*Phlox dasyphylla* Brand is not better than *P. variabilis*, being only a small-flowered and narrow-leaved form of *P. multiflora*, not uncommon in Colorado and Wyoming.

*Phlox densa* Brand is a low condensed from of *P. austromontana*, more like the type than *Phlox austromontana prostrata* E. Nels., which Dr. Brand regards as a mere variety. The only one of Dr. Brand's new species from the Rockies that I regard as good is *P. glabrata* (E. Nels.) Brand (*P. Hoodii glabrata* E. Nels.).

In describing *Phlox aculeata** Prof. A. Nelson compares it with the *P. caespitosa* group. The intercostal portion of the calyx is replicate, however, which would associate it with *P. Stansburyi*. I can not distinguish it from *P. viridis* E. Nels.

Dr. Brand's conception of *Gilia congesta* Hooker is entirely wrong. He regards *G. iberidifolia* Benth. as the typical *G. congesta*. A duplicate of Douglas's plant is found in the Columbia University herbarium, and a closer study of the same shows that it is the same as Jenney's plant from the Black Hills, which constituted a part of *G. spicata capitata* A. Gray, and my number *886*, also from the Black Hills. These two specimens I included in my *G. cephaloidea*. Unfortunately I did not designate a type and some botanists might claim that Jenney's plant which was first mentioned should be regarded as such. The short characterization was, however, drawn principally from my number *2763* from Lima, Montana, and this is marked in our herbarium as the type. Since more specimens have been seen, both of the Montana plant and of that from the Black Hills, it has become evident that they are not exactly the same. As the Montana plant is marked as the type, I now limit my *G. cephaloidea* to it. If Jenney's plant or my *886* were to be regarded as the type of *G. cephaloidea*, this would become a synonym of *G. congesta* and the Montana plant should have a new name. As it is, the *G. cephaloidea* of Brand's monograph should become *G. congesta* Hooker, and Brand's *G. congesta* is *G. iberidifolia* Benth.

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* Bot. Gaz. 52: 270. 1911.

Brand divides the *Gilia spicata* group in two divisions: one containing *G. spicata*, *G. globularis* and *G. trifida*, with the corolla-lobes (in dry state) dark purple; and *G. cephaloidea* and *G. congesta*, with lobes of the corolla (in dry state) whitish. The dark purple color is simply due to poor drying. Dr. Brand also describes the corollas of *G. spicata* as purple. In fact they are greenish white. We have specimens of *G. spicata* which still retain the greenish white color. Such a distinction is scarcely scientific.

Under *Gilia congesta iberidifolia*, Dr. Brand gives as synonyms *G. spergulifolia* Rydb. and *G. roseata* Rydb. Evidently Dr. Brand had not seen a specimen of *G. roseata*. This is perhaps closer related to his own *G. globularis* than to *G. iberidifolia*, except that the stems are branched and bear several heads. He had seen a specimen of *Baker 534*, which I referred to *G. spergulifolia*. When doing so I had in mind only the specimen in the herbarium of the New York Botanical Garden. I do not know by what this number may be represented elsewhere. However, I can not distinguish this from *Nelson 5430*, which Dr. Brand refers to the var. *crebrifolia*, evidently not knowing that the var. *Merrillii* (*G. Merrillii* A. Nels.) is the original *G. crebrifolia* Nutt. A duplicate of the type is in the Columbia University herbarium. The synonymy of this group of Gilias is therefore very mixed. In order to straighten out the matter I give the following synonymy:

GILIA SPICATA Nutt. Jour. Acad. Nat. Sci. Phila. II. 1: 156. 1848.

Gilia globularis Brand, Pflanzenreich $4^{250}$: 120. 1907.

*Gilia spicata capitata* A. Gray, Proc. Am. Acad. **8**: 274 (as to type). 1870.

*Gilia cephaloidea* Rydb. Fl. Colo. 277, in part. 1906.

Gilia cephaloidea Rydb. Bull. Torrey Club **24**: 293 (as to the Montana plant). 1897.

Gilia congesta Hook. Fl. Bor.-Am. 2: 75. 1838.

*Gilia spicata capitata* A. Gray, Syn. Fl. $2^1$: 144, in part. 1878.

*Gilia cephaloidea* Rydb. Bull. Torrey Club **24**: 293, in part. 1897.—Brand, Pflanzenreich $4^{250}$: 121. 1907.

Gilia iberidifolia Benth. in Hook. Jour. Bot. & Kew Misc. **3**: 290. 1851.

*Gilia congesta iberidifolia* Brand, Pflanzenreich $4^{250}$: 121. 1907.

**Gilia nuda** (Eastw.) Rydb.

*Gilia congesta nuda* Eastw. Proc. Calif. Acad. II. **6**: 308. 1896.

Gilia roseata Rydb. Bull. Torrey Club **31**: 633. 1904.

Gilia spergulifolia Rydb. Bull. Torrey Club. **31**: 633. 1904.

*Gilia congesta crebrifolia* S. Wats. Bot. King Exped. 5: 268, in part. 1871.

*Gilia congesta iberidifolia crebrifolia* Brand, Pflanzenreich $4^{250}$: 121. 1907.

Gilia crebrifolia Nutt. Jour. Acad. Nat. Sci. Phila. II. **1**: 156. 1848.

*Gilia congesta crebrifolia* A. Gray, Proc. Am. Acad. **8**: 273. 1870.

*Gilia Merrillii* A. Nels. Bot. Gaz. **34**: 27. 1902.

*Gilia congesta iberidifolia Merrillii* Brand, Pflanzenreich $4^{250}$: 122. 1907.

Gilia Burleyana A. Nels. Bot. Gaz. **54**: 144. 1912.

This species also belongs to this group. Prof. Nelson stated in the original description: "Until now this section contained no perennials." Both *G. iberidifolia* and *G. roseata* are perennials. Gray divides the group in "annuals and short lived perennials or biennials."

**Gilia palmifrons** (Brand) Rydb. sp. nov.

*Gilia congesta palmifrons* Brand, Pflanzenreich $4^{250}$: 122. 1907.

I think also that Dr. Brand has misidentified *Gilia trifida* Nutt.

Dr. Brand evidently drew his description from *Jones 5949*, the only specimen he cited. He described the stamens as being inserted in the middle of the corolla-tube, while Nuttall described them as inserted in the throat. I have not seen Nuttall's type, but I have collected in the region of the type locality, Scott's Bluffs, Nebraska. The only species growing there are *G. spicata* and *G. iberidifolia.* I believe that Dr. Gray interpreted *G. trifida* Nutt. correctly as a depauperate form of *G. spicata.* If this is correct, Brand's *G. trifida* must receive a new name.

### **Gilia frutescens** Rydb. sp. nov.

Fruticose, perennial; stems woody below, branched above, 3–5 dm. high; herbaceous branches 2–3 dm., sparingly pubescent; leaves linear, glabrous or nearly so, simple, 2–5 cm. long, 1–2 mm. wide, callous-tipped; flowers capitate at the ends of the branches; calyx crisp-hairy; teeth lanceolate, cuspidate, shorter than the tube; corolla white, 5–6 mm. long, salvershaped; tube barely exserted; lobes about 2.5 mm. long, oval, acute; stamens inserted in the throat; filaments short; style glabrous, nearly as long as the corolla tube.

The type was labeled *Gilia multiflora,* to which it is not related. It belongs to the *G. iberidifolia* group, and has as entire leaves as *G. spergulifolia* and *G. crebrifolia,* but the habit is different. It differs from all its relatives in the tall shrubby habit. The other species are at most suffruticose and less than 3 dm. high.

UTAH: Springdale, May 14, 1894, *M. E. Jones 5247* (type, in herb. N. Y. Bot. Gard.; duplicate in U. S. Nat. Herb. *no. 326910*).

Dr. Brand has treated the *G. aggregata* group as carelessly as that of the *G. congesta* relatives. It is evident that he has had no specimens of *G. candida* Rydb. and still he makes it *Gilia aggregata* var. *attenuata* forma *candida,* giving *Callisteris leucantha* Greene as another synonym. If he had only read my description, he would not have committed this blunder, for I distinctly pointed out that the lobes of the corolla in *G. candida* are rounded or obtuse at the apex like those of *G. longiflora.* It is a plant with the habit and leaves of *G. aggregata* and the corolla of *G. longiflora.* Both *Callisteris attenuata* and *C. leucantha* have attenuate corolla-lobes and the former is a white-flowered form of *Gilia pulchella* Dougl.,* a species wholly omitted by Dr. Brand. Dr. Brand cited two specimens under the forma *candida*, viz. *Nelson 4198* (should have been *4189*) and *Clements 13*. The former is a white-flowered form of *G. pulchella*, the latter belongs to *Gilia scariosa* Rydb. Dr. Brand did not notice the different structure of the calyx, which places *G. scariosa* close to *G. aggregata Bridgesii* A. Gray. Nelson in the New Manual has also confused things. *Gilia scariosa* is made a synonym of *G. aggregata* and *G. candida* of *G. attenuata*. He has also overlooked the characters of the calyx of *G. scariosa* and the rounded corolla-lobes of *G. candida*.

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* Hook. Fl. Bor.-Am. 2: 74. 1838.

### **Gilia arizonica** (Greene) Rydb.

*Callisteris arizonica* Greene, Leaflets 1: 160. 1905.

*Gilia aggregata typica arizonica* Brand, Pflanzenreich $4^{250}$: 115. 1907.

### **Gilia tenuituba** Rydb. sp. nov.

Biennial; stem about 3 dm. high, finely glandular-puberulent; leaves pinnatifid with narrowly linear, puberulent, cuspidate divisions; inflorescence a thyrsoid panicle, puberulent; flowers short-pedicelled; calyx campanulate, glandular-puberulent, distinctly scarious in the sinuses; teeth lance-subulate, cuspidate, longer than the tube; corolla flesh-colored, nearly 4 cm. long; tube slender, 1 mm. thick below and 2 mm. at the throat; lobes narrowly lanceolate, attenuate, nearly 1 cm. long; stamens unequally inserted far down the corolla-tube, included; style slender, about equaling the corolla-tube.

UTAH: Beaver City, 1877, *E. Palmer 329* (type, in herb. Columbia Univ.). This is also related to *G. aggregata*.

### **Gilia hutchinsifolia** Rydb. sp. nov.

*Gilia arenaria rubella* Brand, Pflanzenreich $4^{250}$: 103. 1907.

This differs from *G. arenaria* Benth. and *G. sinuata* Dougl. in the acute corolla-lobes and broad and again lobed divisions of the leaves. The description "*Caulis inferne* (*an morbo?*) *rufolanatus*," from which Dr. Brand adopted the varietal name, is wholly erroneous. The red coloring is simply grains of red sand adhering to the specimens. This is the reason of my not adopting the varietal name.

### **Gilia straminea** Rydb. sp. nov.

Annual; stem 2–3 dm. high, glabrous, or rarely slightly glandular-puberulent above, straw-colored, simple below, with a few almost erect branches above; basal leaves glabrous, firm, 1–2 cm. long, pinnately lobed, with lanceolate cuspidate-tipped lobes; stem-leaves sessile and partly clasping, lanceolate, sharply dentate with cuspidate teeth or entire; calyx-tube campanulate, 2 mm. long, somewhat scarious in the sinuses, sparingly glandular-puberulent; teeth subulate, 1 mm. long; corolla trumpet-shaped, 7–8 mm. long; tube nearly twice as long as the calyx; capsule exceeding the calyx; seeds 5 or 6 in each cell.

This is related to *G. sinuata*, but differs in the simple, straw-colored, essentially glabrous stem, the glabrous, pale green leaves, and the form and toothing of the stem-leaves.

UTAH: St. George, 1877, *E. Palmer 325*,* in part (type, in herb. Columbia Univ.); also *326*.

Dr. Brand reduced *Gilia Tweedyi* Rydb. to a variety of *G. minutiflora*, without having seen a specimen. I do not think that it is rational to do so, for in *G. Tweedyi* the pod is not 1-seeded, but bears 1–3, usually 2, seeds in each cell, i. e., it is 4-seeded. The plant is more closely related to *G. inconspicua*.

Dr. Brand made *Gilia Haydeni* A. Gray a variety of *G. subnuda* Torr., and gave *G. Crandallii* Rydb. as a synonym of this variety. Professor Nelson regarded *G. Crandallii* as the same as *G. subnuda* and gave *G. Haydeni* and *G. superba* Eastw. as varieties of the same. Both arrangements are incorrect. *G. superba* Eastw. is the typical *G. subnuda* Torr. characterized by the orange or scarlet corolla. In both *G. Haydeni* and *G. Crandallii* the corolla is rose-colored. They are quite distinct from *G. subnuda* and in my opinion distinct from each other.

Dr. Brand's treatment of *Leptodactylon pungens* (Torr.) Nutt. or *Gilia pungens* (Torr.) Benth. and its relatives is far from satisfactory. He divides it in two subspecies: subsp. A. *eu-pungens* and subsp. B. *Hallii* (*Gilia Hallii* Parish), which is a matter of taste, but he also divides the former in four varieties: a. *Hookeri* (Dougl.) Brand; b. *caespitosa* (Nutt.) Brand; c. *tenuiloba* (Parish) Brand; and d. *devestita* Brand.

The first variety is based on *Gilia Hookeri* Benth. To make this species a variety of *G. caespitosa* could be also passed over, as a matter of taste, but Dr. Brand in his treatment usually meant by the variety *a* the typical form. If that is his intention here, he is wholly mistaken, for the type is not viscid. Torrey's type should be placed under his variety *b. caespitosa*, and is exactly like *Goodding 32* and *Parry 236* from Wyoming, which Dr. Brand also refers to that variety. In fact Dr. Brand seems not to know *Leptodactylum caespitosum* Nutt. (*Gilia pungens caespitosa* A. Gray), although he adopts this name for a variety which proves to be the original *G. pungens*. *Leptodactylon caespitosum* is amply distinct, not only by the characters given by Dr. Gray, but also by the 4-merous flowers and the stamens inserted in the tube. All the other species have 5-merous flowers. *Gilia Hookeri* is confined to the western slope and does not extend into Utah, Colorado, New Mexico, and Arizona, as stated by Dr. Brand. The following specimens are wrongly referred to it: *Elmer 502* is typical *G. pungens; Jones 1784* and *MacDougal 183* belong to *G. pungens squarrosa* A. Gray. The Matthews' specimens I have not seen, but I think they also are wrongly referred to it. Of the specimens cited under the variety *devestita*, all I have seen belong to typical *G. pungens*, some of them having slightly longer leaves than the type, but not all.

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* The same number in the herbarium of the New York Botanical Garden is entirely different, and belongs to *Gilia hutchinsifolia*. Maybe some mixing of the labels occurred.

### **Leptodactylon brevifolium** Rydb. sp. nov.

Suffruticose, branched perennial, 1–2 dm. high; stems puberulent and slightly glandular above; leaves 3–5 mm. long, glandular-puberulent or glabrate, 3–5-divided into subulate, acerose, ascending divisions; calyx about 8 mm. long, glandular-puberulent; teeth subulate-acerose, much shorter than the tube; corolla trumpet-shaped, about 15 mm. long; stamens inserted in the throat of the corolla.

This is related to *Leptodactylon pungens* (Torr.) Nutt. and *L. Hookeri* (Dougl.) Rydb. (*Phlox Hookeri* Dougl.; *Gilia Hookeri* Benth.) but has much shorter leaves. The habit and flower are more like the former, but the calyx and young foliage are more or less glandular, though not so copiously so as in the latter.

UTAH: Juniper Range, 1898, *Purpus 6306* (type, in U. S. Nat. Herb.; duplicate in herb. N. Y. Bot. Gard.); Cedar City, *M. E. Jones 5204a;* Montezuma Canyon, *Eastwood;* rocky hills on the San Juan, *Newberry*.

?COLORADO: Gunnison, Aug. 16, 1901, *Baker 830* (doubtful, without flower).

NEW MEXICO: Cedar Hill, San Juan County, *Standley 7998*.

WASHINGTON: Coulee City to Ephrata, June 1902, *Griffiths & Cotton 471*.

NEVADA: Panaca, *V. Bailey 1971*.

Dr. Brand excluded *Gilia caespitosa* A. Gray not only from the genus but also from the family. He makes the following remark: "Species foliis calcareo-glandulosis ab omnibus Polemoniaceis valde abhorret; fortasse Saxifragaceis attributa est."

The leaves are by no means "calcareo-glandulosis," but merely viscid-pubescent as described by Dr. Gray. In the type they are covered by grains of sand, that is all. It is without doubt a species of *Gilia* and probably, as Dr. Gray suggested, related to *G. subnuda*, but as the corolla was unknown the placing in the genus was uncertain. One thing is certain, it should not be placed next to *G. rigidula* as it is in the Synoptical Flora. The duplicate of the type in the National Herbarium bears a single withered and partly torn corolla; this is trumpet-shaped and about 1 cm. long; the real structure is not possible to make out, but the plant is probably related to *G. subnuda*.

Dr. Brand gives *Micranthes diffusa* as a synonym under *Gilia gracilis* subspecies *humulis* var. *micrantha*, while he cites *Heller 3098* (its type) under *G. gracilis* subsp. *eu-gracilis* var. *eritrichoides*, which shows carelessness in identifying the different forms described. In the Columbia University herbarium there is a duplicate of Douglas's collection, which shows that Brand's var. *eritrichoides* is the typical form of *Microsteris gracilis* (Dougl.) Greene.

Dr. Gray in his Synoptical Flora* segregated out *Gilia aristella* from material he had previously included in *Collomia linearis subulata*. The latter he regarded as the same as *Collomia tinctoria* Kellogg. Notwithstanding this judgment of Dr. Gray, which always will weigh considerably, Dr. Brand made *Collomia aristella* (A. Gray) Rydb. a synonym of *C. tinctoria* Kellogg, while he named *C. tinctoria subulata* (A. Gray) Brand from Gray's variety *C.*

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* $2^1$: Suppl. 408. 1886.

*linearis subulata.* Dr. Brand did not give any reason for this change. Furthermore, he did not cite any specimens of his *C. tinctoria* from California and I have seen no specimens of *C. aristella* from that state. Of the variety *subulata,* on the contrary, there are several collections from California in our herbaria. There is nothing either in Kellogg's description or in his figure which would indicate that Dr. Gray had made a misinterpretation. Kellogg's figure is drawn from a young, simple, undeveloped plant, and the peculiar branching of the var. *subulata* in age does not show. Whether *C. tinctoria* and *C. aristella* should be united into one species is another question, but in such a case the variety *subulata* should have been made the species, viz., *C. tinctoria* Kellogg, and *C. aristella* a variety thereof; and this for the following reason: The variety *subulata* is certainly found in the type region of *Collomia tinctoria,* while *C. aristella* apparently is not. Seen from another standpoint, the local and more specialized *C. aristella* must be regarded as the derivative of the more common and less specialized *C. tinctoria* (i. e., the var. *subulata*).

Brand transferred *Gilia sinister* M. E. Jones to *Collomia* without having seen the plant. This was probably because Mr. Jones placed it in the *Collomia* section and compared it with *G. aristella.* But Jones also made the following statement: "This has the general appearance of *G. inconspicua,* but without the basal leaves." The relationship is also with *G. inconspicua.* Several of the species of that group have the calyx enlarged somewhat in fruit; this is true in *G. sinister,* but it is at last ruptured by the capsule and does not have the structure of the calyx in *Collomia.* It is in my opinion a true *Gilia.*

Dr. Brand included a number of forms, in my judgment several good species, under *Polemonium pulcherrimum* Hook. He divides it in three subspecies, *tricolor, delicatum,* and *parvifolium.* The first is separated by its tricolored flowers and equals *P. tricolor* Eastw. The other two subspecies he separated only by the length of the leaflets, a very poor character to use for separating subspecies.* He overlooked the fact that in all these forms included in the subspecies *delicatum*, the stem is pubescent with long white spreading hairs and the leaflets are decidedly acute, while in the forms included in the subspecies *parvifolium*, the stem is merely puberulent and the leaflets usually obtuse.

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* Under var. *Haydenii* Dr. Brand made the following remarks: "The forms from the southern Rocky Mountains, which could be counted to this, are better to be regarded as depauperate forms of subsp. *delicatum.*"

The specimens cited under the subspecies *delicatum* belong to three or four different species. Those from Colorado and Utah belong to *P. scopulinum* Greene and *P. delicatum* Rydb., which perhaps may not be specifically distinct. Those from California belong to *P. californicum* Eastw. Those from Washington and perhaps those from Oregon to an undescribed species, characterized below.

The subspecies *parvifolium* was divided in var. *α Haydenii* and var. *β pilosum* (= *P. pilosum* Greenman). It is very hard to interpret Dr. Brand's arrangement. He gives under the subspecies *parvifolium* the following synonyms: *P. parvifolium* Nutt.; *P. coeruleum* J. Hook.; *P. mexicanum* Nutt.; *P. viscosum* A. Gray, not Nutt., but cited no specimens. His usage as well as that of most European botanists is to designate the typical form by var. *α*. Hence var. *α Haydenii* is the typical form of subsp. *parvifolium*, and still under this he has the following synonyms: *P. Haydeni* A. Nels., *P. montrosense* A. Nels., and *P. Tevisii* Eastw. *P. parvifolium* Nutt. is the same as *P. mexicanum* Nutt. and *P. viscosum* A. Gray, and is characterized by its small dense inflorescence and its obtuse calyx-lobes, or the latter even rounded at the apex; but it is not the same as *P. coeruleum γ* Hook., or *P. Haydeni* A. Nels., or *P. Tevisii* Eastw.

*Polemonium coeruleum γ* Hook. is the original *P. pulcherrimum* Hook., and this should have been made subsp. A var *α*, according to Brand's system. *P. Haydeni* resembles it closely in flowers, leaves and pubescence, but differs considerably in general habit and the inflorescence.

### **Polemonium columbianum** Rydb. sp. nov.

Perennial, with a branched rootstock and caudex; stems several, 2–3 dm. high, viscid-pubescent with flattened hairs, and distinctly glandular in the inflorescence; leaves 5–15 cm. long, likewise sparingly viscid-pubescent, pinnate; leaflets 9–19, elliptic or lance-elliptic, acute, 1.5–3 cm. long; inflorescence corymbiform-paniculate; calyx about 6 mm. long, glandular-puberulent and pubescent; lobes lanceolate, acute, fully equaling the tube; corolla 10–12 mm. long, open-campanulate, violet with yellowish base; lobes rounded-truncate at the apex; stamens two thirds to three fourths as long as style and slightly longer than the corolla.

This resembles *P. scopulinum* Greene in habit, but is a larger plant with much larger flowers. It grows in the mountains of Idaho and Washington at an altitude of 1,500–2,000 m.

IDAHO: Divide between St. Joseph and Clearwater Rivers, July 9, 1896, *Leiberg 1205* (type, in herb. N. Y. Bot. Gard.); Wiesner's Peak, July 8, 1892, *Sandberg, MacDougal & Heller 1049.*

WASHINGTON: Wenatchee Mountains, July, 1897, *Elmer 456;* Goat Mountain, Aug. 12, 1896, *Allen 262;* Clallam, July, 1900, *Elmer 2819;* Palace Camp, 1883, *Mrs. Bailey Willis.*

### **Polemonium intermedium** (Brand) Rydb. sp. nov.

*Polemonium occidentale intermedium* Brand, Pflanzenreich $4^{250}$: 33. 1907.

This I think is well worth specific rank. It is confined to the Columbia River region of Idaho, Washington, and British Columbia.

Dr. Brand regarded *Polemonium speciosum* Rydb. as a good species. Professor Nelson on the other hand makes it a variety of *P. mellitum* (A. Gray) A. Nels., which is evidently erroneous. If it should be made a variety of any of the verticillate species of *Polemonium*, it should have been of *P. viscosum* Nutt. or rather of *P. Grayanum* Rydb., which species Professor Nelson does not regard as distinct. *P. speciosum* has a short blue corolla and subcapitate inflorescence.

## HYDROLEACEAE

### **Hydrophyllum Watsonii** (A. Gray) Rydb. sp. nov.

*Hydrophyllum occidentale Watsonii* A. Gray, Proc. Am. Acad. 10: 314. 1875.

### **Miltitzia foliosa** (Jones) Rydb.

*Emmenanthe foliosa* M. E. Jones, Zoe 4: 278. 1893.

The *Miltitzia* section of *Emmenanthe* of Gray's Synoptical Flora, I think is generically distinct from *Emmenanthe* proper, and DeCandolle's genus *Miltitzia* should be restored. The latter genus is represented in the Rocky Mountain region by this and the two following species.

**Miltitzia salina** (A. Nels.) Rydb.

*Emmenanthe salina* A. Nels. Bull. Torrey Club **25**: 381. 1898.

**Miltitzia scopulina** (A. Nels.) Rydb.

*Emmenanthe scopulina* A. Nels. Bull. Torrey Club **25**: 380. 1898.

**Phacelia orbicularis** Rydb. sp. nov.

Biennial or annual; stems 1–2 dm. high, glandular-villous, often tinged with red, branched; leaves petioled; blades suborbicular in outline, crenately lobed, 1.5–2.5 cm. long, hirsute as well as glandular; racemes many-flowered; calyx-lobes oblong or oblanceolate, obtuse, 3 mm. long; corolla purplish, 6 mm. long, campanulate-funnelform; lobes crenulate; filaments about twice as long as the corolla; seeds faveolate, crenately lobed on the margins and the median ridge.

This is related to *P. integrifolia*, but the plant is smaller and the leaf-blades shorter and broader.

UTAH: Marvin Laccelite, 1894, *M. E. Jones 5663* (type, in U. S. Nat. Herb.).

*Phacelia crenulata* Torr., *P. bicolor* Torr., *P. affinis* A. Gray, *P. glechomaefolia* A. Gray, *P. hispida* A. Gray, *P. humilis* T. & G., *P. demissa* A. Gray, *P. Palmeri* Torr. (not *P. Palmeri* Vasey & Rose), *P. pinetorum* Jones, and *P. pusilla* Torr. have been collected in Utah; *P. glandulifera* Piper and *P. ramosissima* Dougl., in Idaho. I cannot distinguish *P. luteopurpurea* A. Nels. from *P. glandulifera* Piper. *Capnorea incana* Greene, *C. nana* (Lindl.) Raf., *C. nervosa* Greene, and *C. Watsoniana* Greene have been collected in Idaho; the first one also in Montana and the last one in Wyoming; *Emmenanthe penduliflora* Benth. and *Eriodictyon angustifolium* Nutt. in Utah.

## BORAGINACEAE

**Gruvelia setosa** (A. Gray) Rydb.

*Pectocarya setosa* A. Gray, Proc. Am. Acad. **12**: 81. 1877.

I think that the genus *Gruvelia* A. DC. should be restored, being quite distinct from *Pectocarya*. The only other species is *G. pusilla* A. DC., the type of the genus.

Professor Nelson both in the original diagnosis* and in Coulter & Nelson's New Manual† described *Lappula erecta* as having the marginal prickles in a single row, but a duplicate of the type in the Columbia University herbarium and all specimens distributed as *Lappula erecta* by Professor Nelson himself in the herbarium of the New York Botanical Garden have a double row of marginal prickles, the prickles of the outer row being somewhat smaller than those of the inner.

**Oreocarya pustulosa** Rydb. sp. nov.

Perennial, branched at the base; stems 3–5 dm. high, glabrous or nearly so throughout, lower leaves linear-oblanceolate, the upper linear or linear-lanceolate, 3–10 cm. long, green, glabrous beneath, sparingly hairy above; the hairs short and at least in age with conspicuous pustulate bases; flowers paniculate; branches racemose, not secund; pedicels 1–2 mm. long; sepals triangular-lanceolate, acute; corolla white; tube not exceeding the calyx; limb 5–6 mm. broad; lobes orbicular; fruit depressed-globose; nutlets smooth, nearly white, mottled with light brown, more or less separated from each other on the margins, often not all maturing.

This is related to *Oreocarya multicaulis* (Torr.) Greene, *O. suffruticosa* (Torr.) Greene and the Mexican *O. Palmeri* Greene. It differs from the first two in the glabrous stem, green leaves, and light nutlets, and from *O. Palmeri* in broader leaves and different habit. It grows in canyons at an altitude of 1,700–2,000 m.

UTAH: Hammond Canyon, Elk Mountains, July 31, 1911, *Rydberg & Garrett 9320* (type, in herb. N. Y. Bot. Gard.); also same locality, Aug. 9, 1911, *9569;* Dry Wash, southwest of Abajo Mountains, August 10, *9590.*

**Oreocarya Macounii** Eastw. sp. nov.

Biennial or perennial with a slender tap-root; stem slender, 1–2 dm. high, sparingly hirsute; leaves narrowly linear or narrowly linear-oblanceolate, sparingly hirsute; inflorescence racemiform with short branches; corolla white, 5 mm. long, 4 mm. wide; nutlets ovate, obtuse, 2 mm. long, acutely margined, rounded on the back and coarsely muricate.

SASKATCHEWAN: Moose Mountain Creek, July 6, 1880, *John*

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* Bull. Torrey Club **27**: 268. 1900.

† 412. 1909.

*Macoun;* also a specimen from Hooker's herbarium without date, probably collected by Richardson, at Carlton House. (Both in herb. Columbia University.)

*Cryptanthe flexuosa* A. Nelson is, I think, the same as *C. calycosa* (A. Gray) Rydb., and *C. muriculata montana* A. Nels. should be referred to *C. ambigua* (A. Gray) Greene, and *C. Hillmani* A. Nels. to *C. Watsoni* (A. Gray) Greene. *C. flaccida* (A. Gray) Greene has been collected in Idaho; *C. recurvata* Coville, in Utah and Colorado.

*Mertensia coriacea* A. Nels. is the same as *M. lanceolata* Pursh. Professor Nelson gives the range of *M. lanceolata* as Colorado and Wyoming. The type came from western Montana. *M. perplexa* is not the same as *M. coriacea*, as stated by Professor Nelson, but belongs to the *M. alpina* group with subsessile anthers.

*Anchusa officinalis* L. and *Asperugo procumbens* L. have been collected in Colorado; *Plagiobotrys arizonicus* (Gray) Greene in Utah; *P. tenellus* A. Gray in Idaho; *Cynoglossum officinale* L. in Wyoming and Montana; *Eremocarya muricata* Rydb. in Utah; *Lithospermum arvense* L. in Utah; *Mertensia brachycalyx* Piper in Idaho; *M. pulchella* Piper, *M. nutans* Howell, and *M. longiflora* Greene in Idaho and Montana; *Amsinckia hispidissima* Suksd., *A. retrorsa* Suksd. and *A. micrantha* Suksd. have been collected in Idaho.

*Pectocarya miser* A. Nels. I can not distinguish from *P. penicillata* (H. & A.) A. DC. *Eddya hispidissima* Torrey has been collected in Utah.

## VERBENACEAE

*Verbena remota* Benth. was collected in southeastern Utah in 1911 by Professor Garrett and myself. *Verbena bipinnatifida* Nutt. is very rare in the region and *V. canadensis* (L.) Britton does not occur at all. The range given in Coulter & Nelson's New Manual is erroneous. The group is represented in the Rocky Mountains by *V. ambrosifolia* Rydb., *V. Gooddingii* Briq., and *V. ciliata* Benth.

## LAMIACEAE

*Lamium amplexicaule* L. has been collected in Colorado; *Micromeria Douglasii* Benth. and *Trichostoma oblongum* Benth., in Idaho.

*Monarda Nuttallii* A. Nels. or *M. citriodora* of Coulter's Manual is *Monarda pectinata* Nutt.

*Salvia Columbariae* Benth. has been collected in Utah.

## SCROPHULARIACEAE

Miss Eastwood has called to my attention that *Pentstemon acuminatus, P. humilis* Nutt., and *P. glaucus* Graham have been misinterpreted. *P. acuminatus* is a species confined to the Columbia Valley, has a more ample corolla, perfectly glabrous within; the tongue of the sterile filament is strongly curved and only short-bearded at the apex. Whether the so-called *P. acuminatus* of the Rocky Mountain region is a distinct species or should be included in *P. nitidus* Dougl. is hard to tell. A duplicate of the type of the latter is in the Columbia University herbarium, but this, as well as several other specimens, does not have the broad, abruptly acuminate bracts, characteristic of the so-called *P. acuminatus*, but there is no other distinction and intermediate forms are not lacking.

The original *P. humilis* Nutt. is, according to Miss Eastwood, the same as *P. collinus* A. Nels., which therefore passes into synonymy. Dr. Gray in describing *P. humilis** makes Nuttall's plant the type, but evidently had another plant mostly in his mind, viz. *Parry 257* and from this we have received our usual idea of *P. humilis*. This probably should be known as *P. albertinus* Greene,† which apparently is the same. Professor Nelson gives *P. pseudohumilis* Rydb. as a synonym, but this is the same as his own *P. Owenii*.

*Pentstemon glaucus* Graham does not belong to the group where Dr. Gray placed it and has nothing to do with the Rocky Mountain plant *P. stenosepalus* (Gray) Howell (*P. glaucus stenosepalus* A. Gray), but belongs to the *P. confertus* group. It is evidently the same as *P. pinetorum* Piper or closely related to it.

*Pentstemon Macbridei* A. Nels.‡ and *P. perpulcher* A. Nels. are apparently *P. Cusickii* A. Gray and *P. unilateralis* Rydb., respectively. A duplicate of the type of *P. Cusickii* is in the herbarium of Columbia University. The type of *P. unilateralis* is in that of the New York Botanical Garden. Recently botanists have overlooked the fact that in *P. speciosus* the anthers are perfectly glabrous and not short-bearded as in *P. glaber*. Dr. Gray overlooked the fact that *Pentstemon humilis* Nuttall is a member of the *P. erianthera* group and closely related to *P. miser* A. Gray, and placed it near *P. caespitosus* Nutt. Gray's two varieties of *P. humilis*, however, have nothing to do with it, and belong to the *P. caespitosus* group. The variety *Thompsoniae* has been already raised to specific rank and var. *incanus* is probably a form of it.

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* Proc. Am. Acad. **6**: 69. 1862.

† Leaflets **1**: 167. 1906.

‡ Bot. Gaz. **52**: 272, 273. 1911.

### **Pentstemon Leonardi** Rydb. sp. nov.

Low perennial, suffruticose at the base; stems 1–2 dm. high, leafy, glabrous or minutely puberulent; leaves oblanceolate, 2–4 cm. long, short-petioled, glabrous; inflorescence short and often somewhat secund; calyx glabrous, about 6 mm. long; lobes lanceolate, acuminate, not scarious-margined; corolla 12–15 mm. long, rose-purple, only slightly ampliate, glabrous within; anthers horseshoe-shaped, saccate, opening only on the proximal one third, hispidulous on the margins of the pores, otherwise glabrous.

This belongs to the *P. azureus* group and has been confused with *P. Kingii*, but the leaves are broader and glabrous, the corolla less ampliate, the sepals not glandular and more acuminate. It differs from *P. platyphyllus* in the low habit and the smaller oblanceolate leaves.

UTAH: Diehl's Grove, Wahsatch Mountains, Aug. 1, 1884, *Leonard* (type, in herb. N. Y. Bot. Gard.); Deer Creek, *M. E. Jones;* Wahsatch Mountains, July, 1888, *J. H. Paul;* Central Utah 1875, *Parry 72*.

IDAHO: Franklin Basin, Bear River Range, July 24, 1910, *C. P. Smith 2278*.

### **Mimulus Eastwoodiae** Rydb. sp. nov.

*Mimulus cardinalis* Eastw. Bull. Calif. Acad. II. **6**: 312. 1896.
Not *M. cardinalis* Dougl. 1842.

Perennial, with rootstock and stolons; stem 1–2 dm. long, viscid-villous; leaves sessile, coarsely dentate, viscid-villous, 3–5-ribbed, sessile, 2–5 cm. long, the lower cuneate and truncate, the upper obovate or broadly oblanceolate and acute; stolons 1–3 cm. long, rooting at the end and nodes; their leaves less than 1 cm.

long; flowers mostly solitary; pedicels 1–4 cm. long; calyx narrowly funnelform, strongly 5-angled; lobes nearly equal, lanceolate, about half as long as the tube; corolla crimson, 3–4 cm. long, scarcely ventricose; anthers sparingly bearded.

This is related to *Mimulus cardinalis*, to which Miss Eastwood referred it with some hesitation. She also pointed out the low habit and more sharply toothed leaves, but did not notice the most striking feature of the plant, viz., its stolons, which are sent out after blooming. By means of these the plant, growing as it does in crevices of perpendicular or overhanging cliffs, can propagate itself in every direction. Wherever a stolon touches the rock and the root can get a foothold, a new plant is formed, even under the overhanging rocks. In the latter case the plantlet formed will be growing, the following year, with the roots up and the flowers down.

UTAH: In cervices of perpendicular or overhanging rocks, along San Juan River, near Bluffs, August 25–29, 1911, *Rydberg 9883* (type); also the same locality, *Miss Eastwood.*

*Veronica Buxbaumii* Tenore has been collected in Utah and *V. arvensis* L. in Idaho. *Veronica peregrina* L. is not found in the Rocky Mountain region. All specimens so named from there belong to *V. xalapensis* H. B. K. *Antirrhinum Cooperi* A. Gray and *A. Kingii* S. Wats. have both been collected in Utah; *Monniera rotundifolia* Michx. in Montana; *Gratiola ebracteata* Benth. in Montana and Idaho.

### **Triphysaria hispida** (Benth.) Rydb.

*Orthocarpus hispidus* Benth. Scroph. Ind. 13. 1835.

In the genus *Cordylanthus* [*Adenostegia*] Coulter & Nelson* have transposed the color characters of the corolla of *C. Wrightii* and *C. ramosa. Adenostegia capitata* (Nutt.) Greene has been collected in Idaho and *A. canescens* is common around Great Salt Lake. *Cordylanthus bicolor* A. Nels. is evidently the same as *Adenostegia ciliosa* Rydb.

### **Castilleja subcinerea** Rydb. sp. nov.

Perennial with a branched short caudex; stems 3–5 dm. high, canescent-strigose, stout; leaves more or less canescent, strongly

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* See Manual 462. 1909.

3-ribbed, 5–7 cm. long, the lowest entire, linear, the upper 3-cleft; bracts broadly cuneate in outline, 5–7-cleft, canescent, the lower grayish green, the upper tinged with yellow and often brown-tipped; calyx canescent, 2.5 cm. long, equally cleft above and below, each lobe 2-cleft; corolla greenish yellow; upper lip 9 mm. long; the lower about 3.5 mm. long, slightly saccate.

It may be related to the *C. hispida* group, but the plant is grayish strigose, and the bracts yellow-tinged.

IDAHO: Beaver Canyon, June 28, 1895, *C. L. Shear 3041* (type, in herb. N. Y. Bot. Gard.); also *3038;* mountains near Indian Creek, July 21, 1897, *Rydberg & Bessey 4969* (at least in part).

*Euphrasia mollis* (Ledeb.) Wettst. has been collected in Montana; *Pedicularis lanata* Willd. and *P. flammea* L. in the Canadian Rockies; *P. Oederi* Vahl in Montana and *P. centranthera* A. Gray in Utah and Colorado.

## OROBANCHACEAE

*Thalesia purpurea* Heller, *T. minuta* (Suskd.) Rydb. and *T. Sedi* (Suksd.) Rydb. have been collected in Montana and northern Idaho, and *Myzorrhiza pinetorum* (Geyer) Rydb. in Idaho.

## LOBELIACEAE

*Howellia aquatilis* A. Gray and *Heterocodon rariflorum* Nutt. have been collected in Idaho and *Nemacladus ramosissimus* Nutt. in south Utah.

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